

2003 Annual Drinking Water Quality Report

For
Westford Water Department
Westford, Massachusetts
DEP PWS ID # 2330000

This report is a snapshot of drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We are committed to providing you with information because informed customers are our best allies.

I. PUBLIC WATER SYSTEM INFORMATION

Superintendent: *Warren Sweetser*

Address: *60 Forge Village Road*
Westford, MA 01886

Contact Person: *Elaine Major, Environmental Analyst*

Telephone: 978-692-5529 Fax: 978-692-5530

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Our **Water Conservation Policy** is in effect from May 1st through October 31st each year. Even numbered houses water on even numbered days and odd numbered houses water on odd numbered days.

Opportunities for Public Participation

Our office hours are Monday through Friday, 7am to 4pm. Please call the Police Dispatcher at 978-692-2161 for after-hours emergencies. If you would like to participate in discussions regarding your water quality, the Board of Water Commissioners meets at 60 Forge Village Road on the first and third Wednesday of each month at 5:30pm. If you need to request a meeting with the commissioners about a particular issue, please submit your request in writing to Robin Fullford, Water Department Business Manager, to have your topic added to the agenda. An open house is held every spring to invite the public to meet Water Department staff.

Water System Management and Improvements

To ensure that we provide the highest quality of water possible, a Massachusetts-certified operator oversees the routine operations of our system. In addition, the Department of Environmental Protection (DEP) inspects our system periodically for its technical, financial, and managerial capacity to provide safe drinking water to you. In 2003, the Westford Water Department made the following improvements to our system: two new treatment facilities with the capacity to treat 5 million gallons per day were brought into operation to improve water quality, 7 new hydrants were installed, 39 new services and 21 new gates were installed, 0.76 miles of new water main were added, and 6 water main breaks were repaired. This brings the system to a total of 871 hydrants, 5,193 accounts, 121.33 miles of water main, and total storage capacity of 4.85 million gallons. A total of 612.4 million gallons of water was pumped in 2003.

II. YOUR DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

Your water source is from groundwater supplied by two major aquifers in the area.

Is My Water Treated?

We make every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- We add a disinfectant to protect you against microbial contaminants.
- We filter the water to remove iron and manganese, particles, and organisms such as algae, parasites, and bacteria.
- We chemically treat the water by raising the pH to reduce lead and copper corrosion.
- Fluoride is added to aid in dental health and hygiene (1.08ppm annual average in distribution system).
- We aerate the water to remove volatile organic contaminants.
- We aerate the water to reduce radon concentrations.

Source Name	Source ID#	Location of Source
Forge Village Well Field	2330000-01G	Forge Village Road
Nutting Road Well	2330000-02G	Nutting Road
Depot Road Well	2330000-03G	Depot Road
Country Road Well	2330000-04G	Country Road
Forge Village II Well	2330000-05G	Forge Village Road
Howard Road Well Field	2330000-06G	Howard Road
Cote Well	2330000-07G	Beacon Street
Fletcher Well	2330000-08G	Concord Road

How Are These Sources Protected?

DEP has prepared a Source Water Assessment Report, which assesses the susceptibility of public water supplies. The key protection issues noted for Westford include the necessity for continued monitoring of roads and other non-water supply activities in Zone I areas and working with neighboring communities to protect the Zone IIs in the water supply protection area. Susceptibility ratings of moderate to high were assigned to the Zone II protection areas for the Town wells. The wells are located in an aquifer with a high vulnerability to contamination due to the absence of any hydrogeologic barriers (i.e. clay or bedrock), which can prevent contaminant migration. Westford was commended for working with the Highway Department to ensure that highway runoff is directed away from the Zone II, acquiring land to protect the wells within Zone IIs, and working with schools to improve management of athletic field runoff. Outreach efforts are ongoing to increase public understanding of the hydrologic cycle and ways they can help to protect our drinking water resources.

Where Can I See The SWAP Report?

The complete SWAP report is available at the Westford Water Department. For more information, contact Elaine Major at 978-399-2457.

III. SUBSTANCES FOUND IN TAP WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water before we treat it include:

Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. *Inorganic contaminants*, such as salts and metals, can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming. *Pesticides and herbicides* may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses. *Organic chemical contaminants*, such as synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems. *Radioactive contaminants* can be naturally occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, DEP and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration and Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

IV. IMPORTANT DEFINITIONS

ppm = parts per million or milligrams per liter (mg/L)

ppb = parts per billion or micrograms per liter (µ/L)

pCi/L = picocuries per liter (a measure of radioactivity)

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) –The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) -- The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) -- The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique (TT) -- A required process intended to reduce the level of a contaminant in drinking water.

Action Level (AL) -- The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow.

90th Percentile -- Out of every 10 homes sampled, 9 were at or below this level.

Massachusetts Office of Research and Standards Guideline (ORSG) -- This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

Unregulated Contaminants -- These are contaminants for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

V. WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the table(s) are from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the table(s).

	Date(s) Collected	90 TH percentile	Action Level	MCLG	No. Sites Sampled	Sites Above Action Level	Possible Source of Contamination
Lead (ppb)	8-15-03	1	15	0	30	0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	8-15-03	0.56	1.3	1.3	30	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Turbidity	Treatment Technique	Lowest Monthly % of Samples	Highest Detected Daily Value	Violation (Y/N)	Possible Source of Contamination
Daily Compliance (NTU)	5	-----	0.99	No	Soil runoff
Monthly Compliance*	At least 95%	95.4	-----	No	
Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality.					
*Monthly turbidity compliance is related to a specific treatment technique. Our system filters the water so at least 95% of our samples each month must be below the turbidity limits specified in the regulations.					

Regulated Contaminants	Date(s) Collected	Highest Detect	Range Detected	Highest Average	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganics								
Barium (ppm)	4-16-03	0.02	0 – 0.02	.007	2	2	No	Discharge of drilling wastes; discharge from

	to 6-27-03							metal refineries; erosion of natural deposits
Fluoride (ppm)	4-16-03 to 6-27-03	0.8	0.1 – 0.8	0.53	4*	4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate (ppm)	4-23-2003	2.8	0.31 – 2.8	1.4	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Volatile Organics	Date(s) Collected	Highest Detect	Range Detected	Highest Annual Average	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Chlorine (ppm)	Monthly	0.83	0.05 – 0.83	0.43	4	4	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	Quarterly	34.7	0 -34.7	6.1	60	-----	No	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	Quarterly	76	0 – 76.0	34.2	80	-----	No	Byproduct of drinking water chlorination

* Fluoride also has a secondary contaminant level of 2 ppm.

Unregulated Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Inorganic						
Sodium (ppm)	2-19-03 and 2-24-03	26.6 – 66.9	41.3	----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Sulfate (ppm)	June 2003	11 – 16.8	13.2	250	----	Natural sources
Volatile Organics						
MTBE (ppb)	4-23-2003 and 6-27-2003	0 - 1	0.5	20-40	70	Fuel additive
Bromodichloromethane (ppb)	4-23-2003 and 6-27-2003	1 - 7	4.3	---	---	By-product of drinking water chlorination
Chloroform (ppb)	4-23-2003 and 6-27-2003	4 - 8	3.8	---	---	By-product of drinking water chlorination
Dibromochloromethane (ppb)	4-23-2003 and 6-27-2003	0 - 5	0.7	---	---	By-product of drinking water chlorination

Secondary Contaminants	Date(s) Collected	Result or Range Detected	SMCL	Possible Source
Iron (ppm)	6-27-2003	0.03 – 0.05	0.3	Naturally occurring, corrosion of cast iron pipes
Manganese (ppm)	6-27-2003	<0.01 - 0.02	0.05	Erosion of natural deposits

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards?

We are committed to providing you with the best water quality available. However, last year we reported a drinking water violation on 21 May 2003 of the disinfectant residual. Over night, our residual disinfection levels entering the distribution system dropped below 0.2 ppm for more than 4 hours. Massachusetts DEP requires that residual disinfection concentrations in water entering the distribution system be no less than 0.2 ppm for more than 4 hours. There was no boil order or other corrective action necessary and there was still a measurable level of chlorine in the system. The violation was a result of a dual mechanical failure at the Forge Village Treatment Plant and corrective action was taken immediately. No further violations were noted. Inadequately treated water may contain disease-causing organisms such as bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. These symptoms, however, are not caused only by organisms in drinking water, but also by other factors.

VII. EDUCATIONAL INFORMATION

Do I Need To Be Concerned About Certain Contaminants Detected In My Water?

Sodium- Sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled.

VIII. ADDITIONAL INFORMATION

A *Cross-connection program* is required to prevent drinking water contamination from unapproved sources. The purpose of the program is to prevent back siphoning of non-potable water (such as water from irrigation systems, sewers, drains, boilers, pools, etc.) into the public drinking water distribution system. Cross-connection and backflow information is provided at the annual open house.

Iron & Manganese Removal (oxidation and filtration)

Iron and manganese are often present in groundwater at levels that can discolor the water, or cause it to take on unpleasant odors or tastes. Even though the water may still be safe to drink, it is preferable that the iron and manganese be removed. Removal generally requires a two-step process of oxidation and filtration. Oxidation is accomplished by adding chlorine and potassium permanganate to the water. This causes the iron and manganese to form tiny particles. Once this happens, the water passes through special filters consisting of material that is specifically designed to capture iron and manganese particles. Over time, filters start to clog and need to be cleaned using a high-flow backwash process.

Primary Disinfection with MIOX (Chlorine with filtration)

All reservoirs and some ground water sources contain numerous microorganisms, some of which can cause people to become sick. To eliminate disease-carrying organisms, it is necessary to disinfect the water. Disinfection does not sterilize the water; it removes harmful organisms. Sterilization is too costly and kills all microorganisms, even though most are not harmful. The Westford Water Department uses MIOX generated sodium hypochlorite as its primary disinfectant. MIOX destroys organisms by penetrating cell walls and reacting with enzymes. When combined with proper filtration, disinfection with MIOX has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Corrosion Control Through pH Adjustment

Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0). So, the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. We add potassium hydroxide to the water to adjust the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

Westford Water Department
2003 Consumer Confidence Report
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